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M 137

# Office Memorandum • UNITED STATES GOVERNMENT

**TO :** Assistant Director for Communications

**DATE:** APR 1 1955

**FROM :** Acting Chief, Administration Section/CB/PD/OL

**SUBJECT:** Progress Report No. 2 for Contract No. (RD)XG-578, T.O. #7



25X1

Forwarded for your information and records are the enclosed four (4) copies of Progress Report No. 2 for the subject contract.



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Enc. Subject Progress Report

OL/PD/CB/AS/LS:ad (28 March 1955)

Distribution:

Orig. & 1 - Addressee  
1 - (RD)XG-578-T.O. #7  
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**SECRET**

21 February 1955

Serial No. 168

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Subject: Contract No. (RD) XG-578  
Task Order No. 7

Gentlemen:

Enclosed herewith are four (4) copies of Progress Report No. 2 prepared under the subject contract task order. This report covers the period 1 November 1954 to 1 February 1955.

Very truly yours,

25X1

Contract Representative

HSF:grc

Enclosures (4)

This document contains information affecting the national defense of the United States within the meaning of the Espionage Laws, Title 18, U.S.C., Sections 770 and 794. The transmission or communication of its contents in any manner to an unauthorized person is illegal by law.

**SECRET**

PROGRESS REPORT  
NO. 2

Development of the ET-2 (Phase II) - Task 7, Pinto  
Project 3027

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PERIOD: 1 November 1954 to 1 February 1955

OBJECTIVE

The aim of this task is the production of three improved models, design information, and complete manufacturing drawings and specifications for a miniaturized electromechanical transmitter known as the ET-2.

PROGRESS

During the last report period, much difficulty was encountered in the fabrication of the writing head. A new approach has been taken and it is believed that this difficulty has been overcome. No new difficulties have been encountered on the balance of the equipment.

Tape Stepping Mechanism - During the last report period, a slight modification was made in the tape drive mechanism. This modification was the use of a magnetic one-revolution clutch instead of a mechanical one-revolution clutch. The magnetic clutch weighs less and indications are that it will operate more quietly than the mechanical clutch. A test set-up is now being fabricated for checking the operation of this clutch.

Electronic Circuitry - In general the electronic design of this unit is complete. At present, an investigation is being made as to the advisability of using printed circuitry techniques for this unit. Indications are that printed circuits would not be as effective in this application as miniature wiring techniques. The major disadvantage in using printed circuitry is that only one side of a resistor board can be used for dip-solder mounting of parts. Due to this fact, the unit would require nearly twice as many resistor boards. The nature of the electronics in this unit is such that most of the wiring on the resistor board is point to point component mounting wiring using very little wire.

Writing Head - As previously reported, two writing heads of different designs were fabricated. Upon testing, it was found that neither head was satisfactory. Further investigation revealed that the writing yokes were improperly annealed. The annealing of additional sample yokes indicated that the yield of good yokes was very poor for the quality control that is practical for this type of equipment. Therefore, it was necessary to change the design of the writing head.

A completely new approach was made to the design of this portion of the system. Previously, all of the bits in one character were written on the magnetic tape simultaneously. Under the present system, the bits are written serially on the tape. In using a serial method, the writing head becomes a simple, standard

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PROGRESS REPORT NO. 2  
Project 3027

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writing head. Tests performed with this simple head showed a large increase in signal amplitude, thereby increasing the reliability. The spacing and writing of the bits on the tape is controlled by a small printed circuit commutator connected directly to the tape capstan. Rough checks with a mock-up commutator indicate this system will be very satisfactory. A final type commutator is now being fabricated.

With this new system, the indexing requirements of the tape stepping mechanism have been greatly decreased. The printing is controlled by the position of the tape. Previously, it was independent of the tape position.

## PLANS

To test the new serial system of writing, to test the tape stepping mechanism, to complete the layout of the equipment, and to start fabrication of the equipment.

## **PERSONNEL**

The following engineering personnel are assigned to this project.

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**Project Supervisor  
Electrical Engineer  
Mechanical Engineer**

Project Supervisor

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